

P-WT-083

MEASURING 24H INTRAOCULAR PRESSURE FLUCTUATIONS WITH A NEW SENSING CONTACT LENS DEVICE

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Purpose

This feasibility study investigated the ability of a new sensing contact lens to measure IOP in healthy subjects and glaucoma patients.

Methods

A new sensing contact lens (SCL, Sensimed AG, Lausanne, Switzerland), which measures IOP through a pressure sensor embedded in a contact lens, was placed on subjects' eyes for a 24-hour recording session. During the session, each subject underwent IOP provocative tests including postural changes and water drinking test. IOP was measured in the fellow eye at specific time points as well as during the provocative tests, by Goldmann applanation tonometry (GAT), dynamic contour tonometry (DCT) and pneumatonometry (PT). The recordings continued in ambulatory conditions, after the provocative tests.

To evaluate absolute IOP measurement reliability, SCL values obtained immediately after placement were compared with tonometry values acquired on the same eye, prior to SCL placement. The ability to measure IOP fluctuations was assessed by comparing SCL IOP variation to tonometry IOP variation in the fellow eye during provocative tests.

Results

Eight subjects (4 healthy subjects and 4 washed-out glaucoma patients) were included in the analysis. Mean age was 52.9 ± 17.2 years and 62.5% of the subjects were females. 75% of the subjects showed an IOP difference within ± 5 mmHg as compared to GAT on the same eye, (mean (\pm SD) = -2.75 ± 3.52 mmHg). When comparing to DCT, 87.5% of the subjects showed an IOP difference within ± 5 mmHg (0.18 ± 4.95 mmHg). And, 87.5% of subjects showed an IOP difference within ± 5 mmHg (2.03 ± 4.43 mmHg) when comparing to PT.

For all 8 subjects, differences in IOP fluctuation were within ± 5 mmHg for at least 80% of the points when SCL on one eye was compared to DCT and PT on the fellow eye (Figure 1a and b).

Conclusions

The agreement between SCL IOP and tonometry in the same eye is comparable to literature results for routinely used tonometry devices^{1,2}. IOP variations measured by SCL and DCT or PT on fellow eyes demonstrated excellent agreement. SCL is capable of measuring IOP continuously for 24h, collecting a large number of IOP points including during patient activities and sleeping period.

References

1. Mangouritsas G, Mourtoukos S, Mantzounis A, Alexopoulos L. Comparison of Goldmann and Pascal tonometry in relation to corneal hysteresis and central corneal thickness in nonglaucomatous eyes. Clin Ophthalmol. 2011;5:1071-1077.

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2. Andreanos K, Koutsandrea C, Papaconstantinou D, et al. Comparison of Goldmann applanation tonometry and Pascal dynamic contour tonometry in relation to central corneal thickness and corneal curvature. Clin Ophthalmol. 2016;10:2477-2484.

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